AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently Amended) A method ~~Method~~ for controlling a dialysis machine comprising the following steps:

[[-]] providing a filter ~~(1)~~having a first and a second compartment ~~(3, 4)~~separated by a semi-permeable membrane~~(2)~~;

[[-]] connecting ~~a first circuit (5, 6) connected~~ to the first compartment ~~(3)~~ a first circuit for a liquid, said first circuit including a liquid component, a cellular component that is retained by the membrane ~~(2)~~ and solutes that pass through the membrane ~~(2)~~;

[[-]] connecting ~~a second circuit (10,11) connected~~ to the second compartment ~~(3)~~ a second circuit for a dialysis fluid;

[[-]] ~~means (15) for circulating the liquid to be filtered in the fist circuit at an inlet flow upstream of the filter (1);~~

[[-]] ~~means (17, 18, 19) for causing a controlled flow of the liquid component and of the solutes through the membrane (2);~~

~~the method comprising the following steps:~~

[[•]] circulating the liquid to be filtered in the first compartment ~~(3)~~ of the filter ~~(2)~~;

[[•]] causing a controlled flow of the liquid component and of the solutes through the membrane ~~(2)~~;

[[•]] determining ~~(50, 55)~~ a value of a first parameter ~~and a second parameters (UFR, Qp)~~ correlated ~~respectively~~ with the controlled flow of the liquid component

through the membrane ~~(2) and with the flow of the liquid component at the inlet of the first compartment~~;

determining a value of a second parameter correlated with the flow of the liquid component at an inlet of the first compartment, said second parameter being at least one selected in the group comprising: hematocrit, hemoglobin, blood viscosity, blood electrical conductivity, and blood density;

[[•]] calculating ~~(60)~~ a filtration factor as a function of the value of the first and second parameters ~~(UFR, Qp)~~; and

[[•]] ~~checking (65) whether the filtration factor (FF) has a predetermined relation with a limit value of admissibility;~~

[[•]] ~~generating (70) a signal indicating the result of the verification.~~

controlling the flow of the liquid component through the membrane or an inlet flow of the liquid to be filtered as a function of the filtration factor.

2. (Currently Amended) A method ~~Method~~ according to claim 1, ~~characterized in that the controlled flow of the liquid component through the membrane (2) or the inlet flow of the liquid to be filtered is altered if the filtration factor (FF) does not match the predetermined relation~~ further comprising the steps of:

checking whether the filtration factor has a predetermined relation with a limit value of admissibility; and

generating a signal indicating the result of the verification.

3. (Currently Amended) A method ~~Method~~ according to ~~Claim~~ claim 1 ~~or 2~~, ~~characterized in that~~ wherein the first parameter is ~~the~~ an ultrafiltration rate ~~(UFR)~~ and ~~in that~~ the second parameter is ~~the~~ a plasma flow rate ~~(Qp)~~.

4. (Currently Amended) A method ~~Method~~ according to ~~Claim~~ claim 3, ~~characterized in that~~ wherein the step of determining the value of a second parameter comprises the sub-steps ~~steps~~ of:

[[-]] determining an inlet flow rate Q_b of the liquid to be filtered; and

[[-]] determining the concentration ~~Hct~~ of the cellular component in the inlet liquid[[;]], ~~and and in that~~ the calculation step comprising the calculation of the filtration factor ~~(FF)~~ according to the formula:

$$FF = UFR/[Qb(1-Hct)]$$

where FF is the filtration factor, UFR is the ultrafiltration rate, Qb is the inlet flow rate of the liquid to be filtered, and Hct is the concentration of the cellular component in the inlet liquid.

5. (Currently Amended) A method ~~Method~~ according to ~~Claim~~ claim 4, ~~characterized in that~~ wherein the checking step comprises checking whether the filtration factor ~~(FF)~~ is below a predetermined maximum threshold value.

6. (Currently Amended) A method ~~Method~~ according to ~~Claim~~ claim 4 or 5, ~~characterized in that~~ wherein the step of determining the concentration Hct of the cellular component comprises measuring ~~the~~ a ~~haemoglobin~~ hemoglobin value and dividing the ~~haemoglobin~~ hemoglobin value by a constant coefficient.

7. (Currently Amended) A method ~~Method~~ according to ~~one of~~ ~~Claim~~ claim 1 ~~to 6, characterized in that it~~ further comprising ~~comprises~~ the ~~following~~ steps of:

[[-]] detecting ~~(80)~~ pressure values ~~(P_{bi}, P_{bo})~~ at the inlet of the first compartment and an outlet of the first compartment ~~(3)~~ and pressure values ~~(P_{bi}, P_{bo})~~ at ~~the~~ an inlet and an outlet of the second compartment ~~(4)~~;

[[-]] calculating ~~(85)~~ an inlet transmembrane value ~~(TMP_i)~~ as the difference between the pressure value ~~(P_{bi})~~ at the inlet of the first compartment ~~(3)~~ and the pressure value ~~(P_{de})~~ at the outlet of the second compartment ~~(4)~~ and an outlet transmembrane value ~~(TMP_e)~~ as the difference between the pressure value at the outlet ~~(P_{be})~~ of the first compartment ~~(3)~~ and the pressure value ~~(P_{di})~~ at the inlet of the second compartment ~~(4)~~;

[[-]] checking ~~(90)~~ whether the inlet ~~(TMPi)~~ and outlet ~~(TMP_e)~~ transmembrane values satisfy predetermined relations with respective threshold values; and

[[-]] generating ~~(70)~~ a signal indicating the result of the checking step.

8. (Currently Amended) A method ~~Method~~ according to ~~one of Claim~~ claim 1-~~to 7~~, ~~characterized in that it~~ further comprising ~~comprises~~ the ~~following~~ steps of:

[[-]] detecting ~~(80)~~ pressure values ~~(P_{bi}, P_{be})~~ at the inlet of the first compartment and an outlet of the first compartment ~~(3)~~ and pressure values ~~(P_{di}, P_{de})~~ at ~~the~~ an inlet and an outlet of the second compartment ~~(4)~~;

[[-]] calculating ~~(85)~~ an inlet transmembrane value ~~(TMP_i)~~ as the difference between the pressure value ~~(P_{bi})~~ at the inlet of the first compartment ~~(3)~~ and the pressure value ~~(P_{de})~~ at the outlet of the second compartment ~~(4)~~ and an outlet transmembrane value ~~(TMP_e)~~ as the difference between the pressure value at the outlet ~~(P_{be})~~ of the first compartment ~~(3)~~ and the pressure value ~~(P_{di})~~ at the inlet of the second compartment ~~(4)~~;

[[-]] calculating ~~(85)~~ an average transmembrane value between the inlet transmembrane value and the outlet transmembrane value;

[[-]] calculating ~~(95)~~ a value of the actual permeability as the ratio of the value of the first parameter to the average transmembrane value;

[[-]] checking ~~(100)~~ whether the actual permeability value satisfies a respective predetermined relation with respect to threshold values; and

[[-]] generating ~~(70)~~ a signal indicating the result of the checking step.

9. (Currently Amended) A dialysis ~~Dialysis~~ machine ~~(35)~~ for treatment of a liquid to be filtered, comprising a liquid component, a cellular component and solutes, the machine comprising:

[[-]] a filter ~~(1)~~ having a first and a second compartment ~~(3, 4)~~ separated by a semi-permeable membrane ~~(2)~~;

[[-]] a first circuit ~~(5, 6)~~ for the liquid to be filtered, comprising a liquid inlet line ~~(5)~~ connected to an inlet of the first compartment ~~(3)~~ and a liquid outlet line ~~(6)~~ connected to an outlet of the first compartment ~~(3)~~;

[[-]] a second circuit ~~(10, 11)~~ for a dialysis fluid comprising a dialysis liquid inlet line ~~(10, 11)~~ connected to an inlet of the second compartment ~~(4)~~ and a dialysis liquid outlet line ~~(11)~~ connected to an outlet of the second compartment ~~(4)~~;

[[-]] a first pumping apparatus ~~means (15)~~ connected to the first circuit ~~(5, 6)~~ for circulating the liquid to be filtered through the first compartment ~~(3)~~;

[[-]] a second pumping apparatus ~~means (17, 18, 19)~~ connected to the second circuit ~~(10, 11)~~ for circulating a dialysis fluid in the second compartment ~~(4)~~ and for causing a flow of part of the liquid component and of the solutes through the membrane ~~(2)~~;

[[-]] ~~means~~ a detector for detecting ~~(50)~~ the value of a first parameter correlated with the controlled flow of the liquid component through the membrane ~~(2)~~ and for detecting the value of a second parameter correlated with the flow of the liquid component at the inlet of the filter ~~(2)~~, said second parameter being at least one selected in the group comprising: hematocrit, hemoglobin, blood viscosity, blood electrical conductivity, and blood density;

[[-]] a first calculator ~~means~~ for calculating ~~(60)~~ a filtration factor ~~FF~~ as a function of the value of the first and second parameters; and

[[-]] ~~first comparison means (65) for comparing the filtration factor (FF) with a limit value of admissibility; and~~

[[-]] ~~signaling means (70) for generating a signal (A) indicating the result of the comparison.~~

a first controller for controlling the flow of the liquid component through the membrane or the inlet flow of the liquid to be filtered as a function of the filtration factor.

10. (Currently Amended) A dialysis ~~Dialysis~~ machine according to ~~Claim~~ claim 9, ~~characterized in that it further comprises first control means (75) for controlling one of the first and second pumping means (15, 17, 18, 19) and altering one of the inlet flow of the liquid to be filtered and the controlled flow of the liquid component through the membrane (3) when the filtration value does not have an admissible value.~~ further comprising:

a first comparing device for comparing the filtration factor with a limit value of admissibility; and

a signaling device for generating a signal indicating the result of the comparison.

11. (Currently Amended) A dialysis ~~Dialysis~~ machine according to ~~Claim~~ claim 9 ~~or 10~~, ~~characterized in that~~ wherein the first parameter is a rate of ultrafiltration ~~(UFR)~~ and the second parameter is a plasma flow rate ~~(Q_p)~~.

12. (Currently Amended) A dialysis ~~Dialysis~~ machine according to ~~one of the Claim~~ claim 9 ~~to 11~~, ~~characterized in that~~ wherein the detector ~~detection means include means for detecting (50)~~ detects the flow rate ~~Q_b~~ of the liquid circulated by the first pumping apparatus ~~means (15)~~ and a measurement device ~~means (16, 55)~~ for measuring the concentration ~~Hct~~ of the cellular component, and ~~in that the calculation means (60)~~ said first calculator calculates the filtration factor according to the formula:

$$FF = UFR/[Qb(1-Hct)]$$

where FF is the filtration factor, UFR is the ultrafiltration rate, Qb is the inlet flow rate of the liquid to be filtered, and Hct is the concentration of the cellular component in the inlet liquid.

13. (Currently Amended) A dialysis ~~Dialysis~~ machine according to ~~one of Claim~~ claim 9 ~~to 12~~, ~~characterized in that it~~ further comprising ~~comprises~~:

[[-]] a first, a second, a third and a fourth pressure sensor ~~(20 to 23)~~ arranged respectively on the liquid inlet line ~~(5)~~, on the liquid outlet line ~~(6)~~, on the dialysis fluid inlet line ~~(10)~~ and on the dialysis fluid outlet line ~~(11)~~ for generating, respectively, a first, a second, a third and a fourth pressure value ~~(P_{bi}, P_{bo}, P_{di}, P_{do})~~;

[[-]] a second ~~means~~ calculator for calculating an inlet transmembrane value ~~(TMP_i)~~ as the difference between the first and fourth pressure ~~value~~ values and an outlet transmembrane value ~~(TMP_o)~~ as the difference between the second and third pressure ~~value~~ values;

[[-]] a ~~second comparison means~~ comparing device for comparing the inlet and outlet transmembrane values with respective threshold values;

[[-]] and a second controller ~~control means (75)~~ for controlling the first pumping apparatus and the second pumping apparatus ~~means (15, 17, 18. 19)~~ and for altering one of the inlet flow of the liquid to be filtered or of the controlled flow of the liquid component through the membrane ~~(2)~~ when the inlet and outlet transmembrane values do not have permissible values.

14. (Currently Amended) A dialysis ~~Dialysis~~ machine according to ~~one of Claim~~ claim 9 ~~to 13~~, ~~characterized in that it comprises~~ further comprising:

a first, a second, a third and a fourth pressure sensor ~~(20 to 23)~~ arranged respectively on the liquid inlet line ~~(5)~~, on the liquid outlet line ~~(6)~~, on the dialysis fluid inlet line ~~(11)~~ and on the dialysis fluid outlet line for generating, respectively, a first, a second, a third and a fourth pressure value ~~(P_{bi}, P_{bo}, P_{di}, P_{do})~~;

[[-]] a ~~third~~ second calculator ~~means~~ for calculating ~~(85)~~ an inlet transmembrane value ~~(TMP_i)~~ as the difference between the first and fourth pressure value and of an outlet transmembrane value ~~(TMP_o)~~ as the difference between the second and third pressure value;

[[-]] a ~~fourth~~ third calculator ~~means~~ for calculating ~~(85)~~ an average transmembrane value ~~(TMP_{ave})~~ between the inlet transmembrane value and the outlet transmembrane value ~~TMP_o~~;

[[-]] a ~~fifth~~ fourth calculator ~~means~~ ~~(95)~~for calculating an actual permeability value ~~(K_{uf})~~ as the ratio of the value of the first parameter and the average transmembrane value;

[[-]] ~~third comparison means~~ a comparing device ~~(100)~~ for comparing the inlet ~~TMP_i~~ and outlet ~~TMP_o~~ transmembrane values with respective threshold values;

[[-]] and a ~~third~~ second controller ~~control means (75)~~ for controlling one of the first pumping apparatus and the second pumping apparatus ~~means (15, 17,.18, 19)~~ and for altering one of the inlet flow of the liquid to be filtered and the controlled flow of the liquid component through the membrane ~~(2)~~ when the inlet ~~TMP_i~~ and outlet ~~TMP_o~~ transmembrane values do not have respective permissible values.

15. (Currently Amended) A dialysis ~~Dialysis~~ machine according to ~~one of Claim~~ claim 9 ~~to 14~~, ~~characterized in that~~ wherein the first pumping apparatus ~~means~~ comprises a first pump ~~(15)~~ installed in the liquid inlet line ~~(5)~~, and ~~in that~~ the second pumping apparatus ~~means comprise~~ comprises a second pump ~~(16)~~ installed in the dialysis fluid inlet line ~~(10)~~, a third pump ~~(18)~~ installed in the dialysis fluid outlet line, ~~(11)~~ and a fourth pump ~~(19)~~ installed in a branch ~~(11a)~~ of the dialysis fluid outlet line ~~(11)~~, and ~~in that the~~ said first controller ~~control means (75) control~~ controls the fourth pump ~~(19)~~.

16. (New) A method for controlling a dialysis machine comprising the following steps:

providing a filter having a first and a second compartment separated by a semi-permeable membrane;

connecting to the first compartment a first circuit for a liquid including a liquid component, a cellular component that is retained by the membrane, and solutes that pass through the membrane;

connecting to the second compartment a second circuit for a dialysis fluid;

circulating the liquid to be filtered in the first compartment of the filter;

causing a controlled flow of the liquid component and of the solutes through the membrane;

determining a value of an ultrafiltration rate of the liquid component through the membrane;

detecting a transmembrane pressure value across the membrane;

calculating a value of the actual permeability as the ratio of the value of the ultrafiltration rate to the transmembrane pressure value;

checking whether the actual permeability value satisfies a respective predetermined relation with respect to one or more threshold values; and,

generating a signal indicating the result of the checking step.

17. (New) A method according to claim 16, wherein the transmembrane pressure value detection step comprises the following sub-steps:

determining pressure values at an inlet and an outlet of the first compartment and determining pressure values at an inlet and an outlet of the second compartment;

calculating an inlet transmembrane value as the difference between the pressure value at the inlet of the first compartment and the pressure value at the outlet of the second compartment and an outlet transmembrane value as the difference between the pressure value at the outlet of the first compartment and the pressure value at the inlet of the second compartment; and

calculating the transmembrane pressure value as an average transmembrane value between the inlet transmembrane value and the outlet transmembrane value.